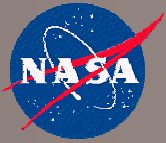


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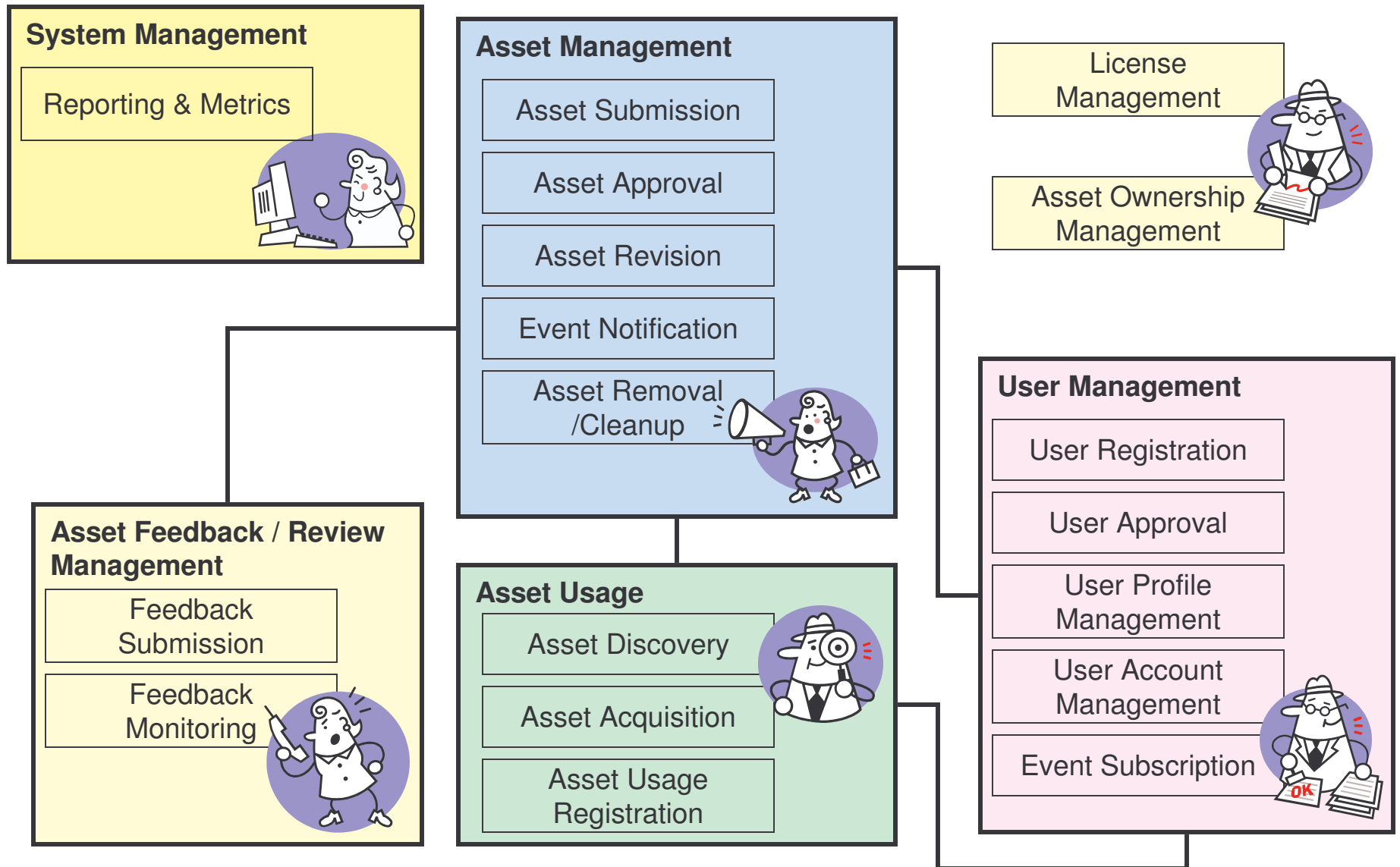
Earth Science Data System Reuse Working Group

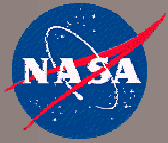
Reuse Enablement System

Steve Olding



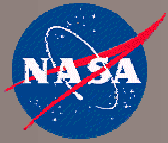
Key features of reuse enablement system





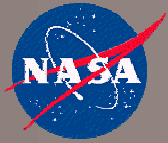
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Reuse Enablement System Requirements



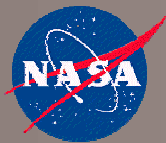
General requirements

-
- The system will facilitate the distribution and reuse of software development artifacts across the earth and space science communities.
 - The reusable artifacts supported by the system will include software components and other digital artifacts used in the software development process.
 - The system will run on industry standard hardware and operating system.
 - The system will support remote access through standard internet browsers.
 - The system will support the automated collection of system and asset usage metrics.
 - The system will provide error handling for all capabilities.
 - The system shall be flexible to support changes in NASA policy and strategy.

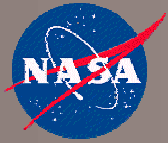


Search requirements

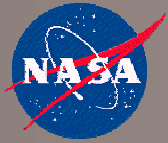
-
- The system will allow users to browse and look at system content without registering (UC006).
 - The system will allow users to discover (search for and find) assets of interest using multiple search mechanisms (e.g. keyword search or category search) (UC006).
 - The system will allow search results to be ordered in a number of ways (e.g. by category or rating) (UC006).



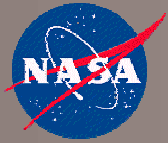
- The system will allow new users to register with the system (UC001, UC007).
 - The user role defined by the registration will determine the user's access authority within the system.
- Each user registration will require the approval of a system administrator (UC001, UC007).
- The system will allow a user to update their user profile (UC013).
- The system will allow registered users to provide system feedback (UC004, UC011).
- The system will allow registered users to subscribe to system or asset events (including events such as new versions, updates, comments supplied by other consumers) (UC005, UC008).



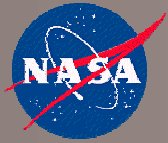
-
- The system will allow allow a Consumer to acquire an asset from the system repository (UC012).
 - The system will allow allow a Consumer to register usage of an asset (UC009).
 - Different from downloading the asset. This indicates active usage of the asset.
 - The system will provide a user forum for discussion and comments on assets (Implied by UC017).
 - The system will allow a Consumer to provide a rating and feedback on his/her experience with a particular asset (UC010).
 - The system will allow posting of requests for reusable assets that currently are not in the system.



-
- The system will allow a Provider to submit a new asset profile to the system (UC002).
 - The Provider may optionally upload artifacts associated with the asset (UC002).
 - Each asset submission will require the approval of a Content Manager before it can be accessed by other system users (UC019).
 - The system will allow a Provider to update the information about an asset and change the artifacts associated with the asset (UC003).
 - The system will allow Providers to subscribe to asset events including events such as comments and new requests pertaining to their contribution (UC005, UC008).

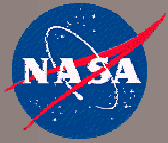


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- The system will allow users to review feedback on assets and allow the Content Manager to remove feedback on assets (e.g. to make sure comments are on topic) (UC018).
 - The system will allow the Content Manager to review and approve asset submissions prior to them being made available to the community (UC019).
 - The system will allow the Content Manager to review the assets and remove those which are no longer relevant (this includes those that have poor reviews and/or no users) (UC020).
 - The system will allow the Content Manager to review unsuccessful searches to capture consumer demand for assets that aren't registered (UC022).



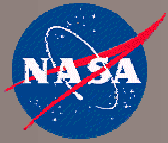
System administration

-
- The system will allow Administrators to monitor the general operating state of the system and perform designated routine tests to determine that things are functioning (UC014).
 - The system will allow Administrators to manage user accounts and passwords (UC015).
 - The system will allow Administrators to monitor user feedback and uses it to determine evolutionary needs of the system and other uses (UC016).
 - The system will allow Administrators to Generate reports including metrics.
 - The system will send notifications to subscribed users of system issues or events.

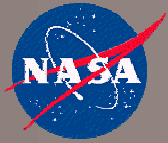


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Reuse Enablement System Information Needs (1st draft)

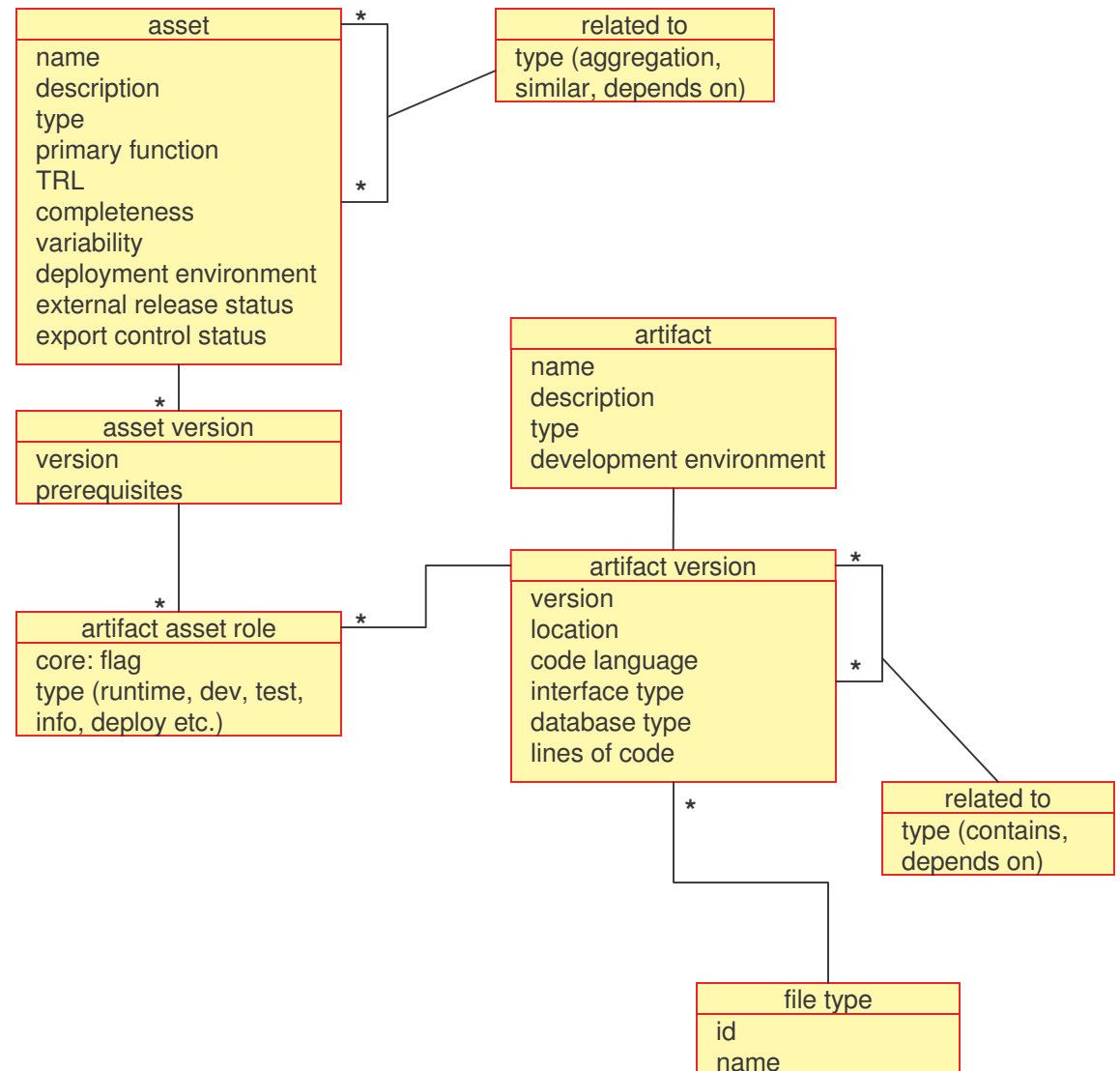


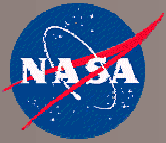
-
- A reusable asset provides a pre-built solution for one or more problems, usually within a specific context
 - Assets can be related to other assets in a variety of ways, for example
 - An asset may be dependant on another asset
 - An asset may be similar to, or solve the same problem as, another asset
 - Over time, assets may be changed creating new asset versions



- Assets are comprised of one or more 'artifacts'
- Each artifact is a single distinct work product from some part of the software development lifecycle (typically stored as an individual file of a standard file type) for example
 - A source code file
 - A build script
 - A user guide
- Like assets, artifacts can be related to other assets in a variety of ways
- Over time, individual artifacts may be changed creating new artifact versions
- Artifact versions can be packaged together in different combinations creating different assets

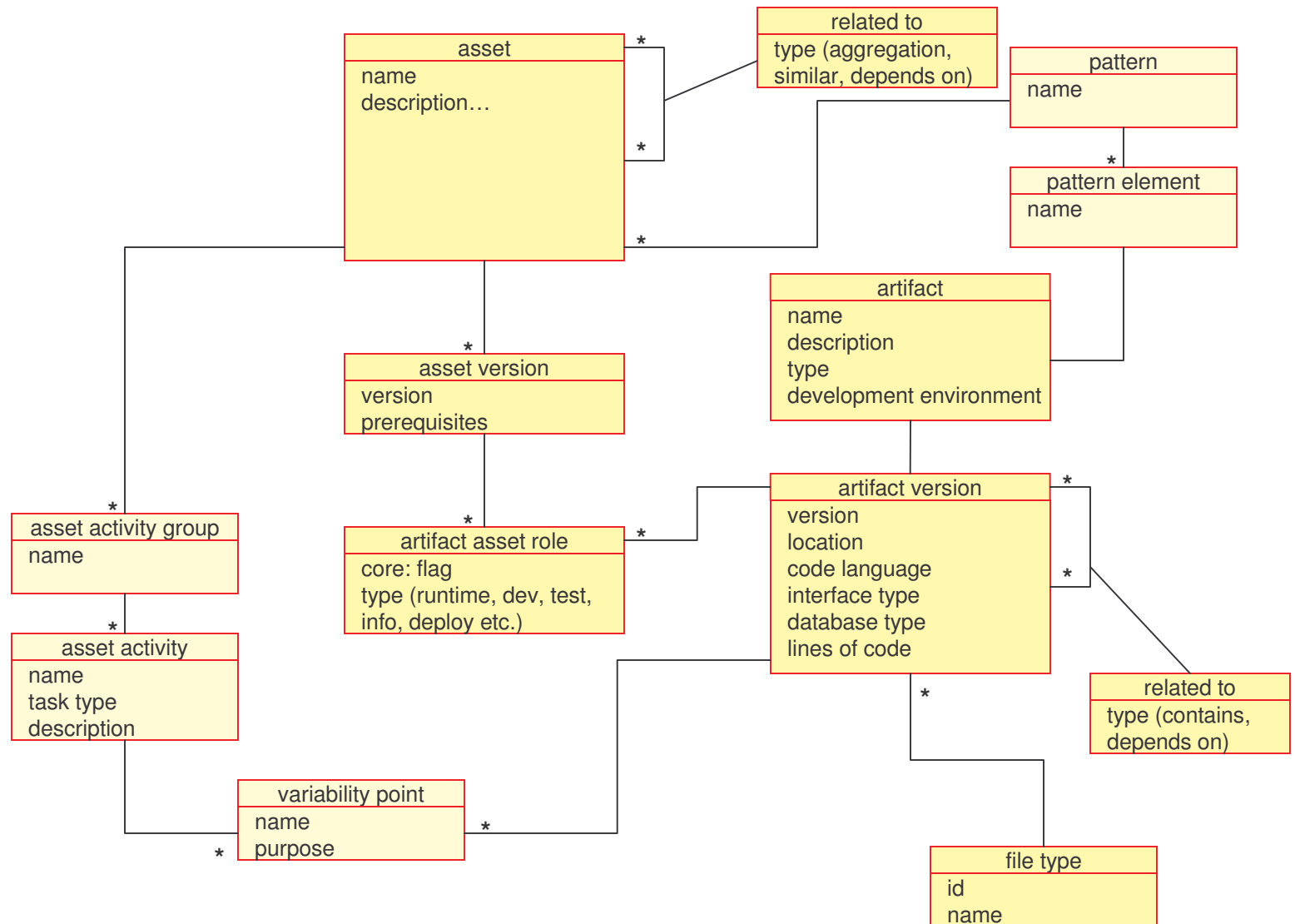
Assets and Artifacts

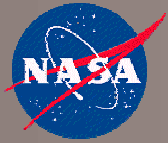




- Patterns
 - An software asset may implement a particular software pattern
 - An artifact may implement a particular element of a software pattern
- Variability
 - Variability describes the extent to which an asset can be customized, for example
 - A black-box component, delivered only as an executable file, may be invariable
 - A white-box component, delivered with source code and other intermediate development artifacts, may be highly variable
 - A variability point identifies specific customization point where an artifact is expected to be modified
- Asset Activities
 - A asset activity group identifies a set of activities that are performed when the asset is reused
 - Each activity group is comprised of one or more specific tasks
 - An activity may apply to an individual variability point, for example
 - Setting a parameter value

Asset Customization and Patterns





- **Asset Ownership**

- An asset may be initially created by one organization but subsequently modified and improved by other organizations
- We may be interested in knowing which projects are using which versions of a particular asset as a measure of its reusability and to keep users informed of asset improvements
- Assets may be shared using many different licensing terms (including Open Source licenses)

- **Asset Reviews**

- Feedback from existing users of an asset can give prospective users useful insights into the assets reusability

Ownership and Usage

